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ABSTRACT

The University of Tennessee Knoxville's (UTK) predoctoral training program, which is designed to increase the participation of women and minorities in educational research, is described. The program consists of six student associates (second-year doctoral in education and home economics), six field associates (individuals with doctorates who are employed in leadership positions in education in Tennessee), six faculty associates (assistant professors at UTK who need recognition of their research for promotion and tenure purposes), and six faculty mentors (faculty at UTK with established reputations as regional leaders in educational research). The following project objectives are considered: developing student associates' research skills: increasing student associates' research involvement: increasing student associates' visibility among practitioners in educational research and development: building and extending supportive networks among women and minorities in educational research: and enhancing student associates' employability in research-related jobs. The six student associates administered their own National Institute of Education grant and program evaluation as part of their training in research. Assisted by a consultant, they designed and administered instruments to provide formative and summative evaluation of four program objectives. It is suggested that project experiences in research did increase students' research productivity and self-assessments of their research skills. Several research proposals were written and funded. Each student presented at least two papers at regional or national meetings: each wrote an article for submission to a journal. One student sought employment and acquired a job in educational research. (SW)

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EVALUATION OF THE UNIVERSITY OF TENNESSEE PRE-DOCTORAL TRAINING PROGRAM DESIGNED TO INCREASE PARTICIPATION OF WOMEN AND MINORITIES IN EDUCATIONAL RESEARCH

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Introduction

At the University of Tennessee, Knoxville (UTK), a three-year program for the advancement of minorities and women in the field of educational research which is funded by the National Institute of Education is addressing the concern that women and minorities presently are underrepresented in educational research and development. This training grant is designed to enhance research skills and increase the competencies of women and minorities to participate in educational research. The underrepresentation of women and minorities in educational research is mirrored in the membership of the American Educational Research Association, which at the end of the academic year 1978-79 was composed of 3% blacks, 5% American Indians, 2% Hispanics, 89% Caucasians, and 3% others (American Educational Research Association, 1979). Women comprised 36% of total AERA membership in April 1980. Thirty percent of the primary or secondary authors listed as presenting at the 1980 Annual Meeting were women, but 88% of all invited presentations were made by male speakers (American Educational Research Association, 1980).

While the proportion of women presenting at annual meetings has grown from 8.8% in 1970 (Scheuneman, 1980), an analysis of five education journals including the American Educational Research Journal revealed that from 1973-1979 no increase occurred in the number of articles authored or coauthored by women (Lockheed and

Stein, 1980). It is perhaps true, as Cronin and Pancrazio (1979) have stated, that many people, male and female, still view research as a masculine pursuit.

In an attempt to provide more equitable participation and rewards for women and minorities in educational research, several special interest groups within AERA have been formed, including Research Focus on Black Education, Research on Women in Education, and Research on Multicultural/Multiracial Education. Two standing committees have been established on the Role and Status of Women in Educational Research and Development. However, as Frierson aptly states, "Most of the efforts in modifying the roles and status of minorities must take place at institutions and agencies where minorities are trained and employed if substantive results are to be seen" (1980, p. 5).

Valverde has formulated four goals that are essential to ensure the survival and success of minority researchers:

1. to acquire training related to research competencies
2. to be incorporated into the research community
3. to maintain a representative number of and meaningful contribution by racial and ethnic researchers in the research profession
4. to increase the number of culturally diverse researchers in the research profession (1980, p. 16).

Frierson's and Valverde's comments are equally valid for women in the field of educational research.

Entry into the field of educational research requires a level of proficiency which may be acquired through the study of research design and methods, data analysis, and technical writing, but also requires the opportunity to apply these skills in supervised research efforts.

The program at the University of Tennessee, Knoxville (UTK) provides opportunities for women and minority predoctoral students to take course work and engage in applied research in a university residential atmosphere which is critical in helping people develop self-reliance, initiative and maturity. Assistantships for

graduate study such as those provided by this project reduce the need for program participants to seek other employment, allowing more complete commitment to research goals.

Women and Minorities in Educational Administration

Women and minorities are significantly underrepresented in educational administration as well as in educational research and development. Although this situation is improving, the proportion of men versus the proportions of women and of minorities in the field are far from equivalent given their representation in the population. The National Center for Educational Statistics has reported that from 1970 through 1975 only 594 (10.6%) of the 5,536 doctoral degrees in educational administration were granted to women (U. S. Government Printing Office, 1976), though women represent 51 percent of the population.

In a report to Representative Shirley Chisholm the U.S. General Accounting Office reported that as of November 10, 1980 the top six NIE management positions were held by white males and one minority female. Of the 38 senior management positions at NIE, 11 were filled by minorities and 13 by women. NIE's most serious representation problem appeared to be in the concentration of minorities and females in low-paying clerical/support positions: Nearly half of NIE's minority and female personnel were employed in such positions.

If these trends continue, few women and/or minorities will be in administrative positions with the authority to direct research. Fortunately, viable alternatives are available to counteract those trends. George Kuh and Martha McCarthy (1980) conducted a study to assess the research orientation of doctoral students in preparation programs in educational administration. The findings suggest that students' interest in and appreciation of inquiry increase the more they are exposed to and become experienced in research activities. These authors call for a concentrated research effort in order to ensure the growth of educational administration

in the future. According to Kuh and McCarthy, "Educational administration preparation programs must provide opportunities for students to become involved in inquiry activities in addition to the required research-related courses (e.g., statistics and data processing)" (p. 119).

Through research-intensive doctoral programs in education and related fields, new researchers can learn to recognize and use existing research networks, and current researchers can serve as "mentors" to facilitate entry of new researchers into the field. Universities can provide training programs of the type funded by NIE that will 1) increase the pool of qualified women/minority researchers, 2) strengthen university commitment to this type of program, and 3) generate research of high quality.

UTK Project Structure

The UTK Project provides a network of support for women and minorities via its personnel structure, which consists of four tiers: six Faculty Mentors, including the Project Director, all professors at UTK with established reputations as regional leaders in educational research; six Faculty Associates, assistant professors at UTK who need to achieve recognition of their research efforts in order to be considered for promotion and tenure; six Field Associates, individuals with doctorates who are employed in positions of leadership in schools and colleges throughout Tennessee; and six Student Associates, second-year doctoral students in education and home economics at UTK. Nineteen (70%) of the 24 Project participants are women and/or minorities.

Faculty Mentors act as research consultants and assist other participants to expand their networks of professional contacts by introducing them and their achievements to research workers outside UTK. Faculty and Field Associates provide ideas for research projects and sites for data collection (in school and university classrooms and administrative settings). Student Associates collaborate with other

participants in gathering information, processing data, interpreting results, and producing reports. Under the guidance of the Project Director, the Student Associates take responsibility for day to day Project management, including arranging and conducting meetings, communicating Project developments to all participants, preparing progress reports and grant continuation proposals, and developing evaluation procedures.

Communication and identification of working teams are facilitated for this large network of participants by the generation on a quarterly basis of a computer printout which lists the current research interests and skills of each participant. Individuals sharing a common interest are encouraged to collaborate in developing (a) proposals for research, or (b) analyses of data collected previously, either of which could lead to production of a technical report, a paper for presentation at a conference, or an article for publication.

Project Evaluation

Training programs frequently are not evaluated formally, but are judged to be successful if participants satisfactorily complete licensure examinations, attain degrees, or achieve similar hallmarks. The University of Tennessee Project differs significantly from many other training projects in that the evaluation has been and continues to be an integral part of the learning experience for the Student Associates (SAs). Working during 1979-80 in an apprenticeship relationship with external evaluation consultant William C. Wolf, Jr., Professor at the University of Massachusetts, Amherst, the SAs planned and implemented an evaluation of perceived and actual success of the project.

In an initial meeting with the SAs, Dr. Wolf facilitated discussions leading to the clarification of Project goals and objectives and identification of appropriate measures of success. In the following weeks, as the SAs developed formal and informal procedures with which to collect data, Dr. Wolf was consulted by mail and by telephone.

During a final campus visit, he acted as a "trouble-shooter" and helped the SAs plan data analysis procedures. At the end of the Project year, Dr. Wolf reviewed evaluation summaries which eventually were integrated by the SAs into the final Project report for 1979-80.

The following sections of this paper are organized according to the five Project objectives identified in consultation with Dr. Wolf. These objectives were:

1. To develop Student Associates' research-related skills
2. To increase Student Associates' research involvement
3. To increase Student Associates' visibility among practitioners in educational research and development
4. To build and extend supportive networks among women and minorities in educational research
5. To enhance Student Associates' employability in research-related jobs.

Objective I: To Develop Student Associates' Research-Related Skills

Research-related skills may be developed most effectively through a combination of classroom instruction and direct, supervised, research involvement. A perusal of the SAs' academic transcripts and resumes provided baseline data for Objective I and facilitated the individualization of activities for each SA. Progress toward Objective I was measured utilizing three instruments: the Student Associate Log (SAL), the Activity Survey Form (ASF), and the Individual Development Continuum (IDC).

The SAL was initially formulated as a means of communication with the Project Director. It quickly became apparent, however, that the SAs generally perceived their group as supportive, and so were able to openly discuss disagreements or dissatisfactions in the group. The nature of the SAL then changed, becoming a weekly record of all formal and informal research-related or network-extending activities in which the SA engaged. Data from the SALs indicated that six Student Associates completed milestone examinations requiring research competency, and that all completed coursework and/or training seminars in statistics, research design, data processing, and program evaluation.

The Activity Survey Form (ASF), administered quarterly to all Project personnel, consisted of four open-ended questions requesting the respondent to list all of his/her research-related activities, including papers submitted and accepted for publication or presentation. This quantitative assessment of Project output simplified the process of quarterly report writing, and allowed each SA to compare his/her output to that of others. Although "exposure" to research activity does not guarantee increased expertise in research-related skills, it generally was agreed among the SAs that the greater their immersion in ongoing research activity, the more confident and skilled they were likely to become. An analysis of ASF data indicated that each SA became involved in at least four major research efforts with other Project personnel.

Perhaps just as important to the neophyte researcher as skill-building research involvement is one's perception of one's own abilities and skills. The Individual Development Continuum (IDC) was a 22-item scale with a Likert-type response format. Respondents rated their skills/abilities on topics such as research design, automated data processing, and statistical analysis, using a 7-point scale ("none" to "very high"). The IDC was administered during the Fall and Spring Project Quarters. Data from the IDC allowed each SA to compute a gain score on his/her responses. Responses also were averaged across respondents, allowing the computation of a group gain score, and permitting the SA to compare his/her self-ratings against those of others.

Analysis of group gain scores after the Spring administration of the IDC revealed that the SAs' self-ratings had improved on all items except Concerns of Women and Minorities, which decreased from 5.7 to 5.0; and Leadership Skills, which remained stable at 5.0. The negative gain score obtained on the Concerns of Women and Minorities may have been the result of the discovery that the topic was much larger and more complex than previously supposed. The largest gain scores were obtained on Automated Data Processing (+2.4), Network Contacts (+1.7), Measurement Techniques (+1.5), Research Design (+1.15), and Paper Presentation (+1.15). The overall gain score across all items for all respondents was +1.0.

Objective II: To Increase Student Associates' Research Productivity

In addition to asking about on-going research involvements, the Activity Survey Form (ASF) also solicited information on the numbers of papers submitted and accepted for publication and presentation. Analysis of these data indicated that each SA submitted at least one paper for presentation, presented at least two papers at regional or national meetings, and participated in the development of several data collection instruments. Several SAs also wrote portions of quarterly and final project reports in addition to those for the NIE Project itself. A quantitative statement of Project participant productivity for the academic year 1979-80 is provided in Table I.

Objective III: To Increase Student Associate Visibility Among Practitioners in Educational Research and Development

Student Associate Logs (SALs) and Activity Survey Forms (ASFs) indicated that SAs attended and/or presented papers at more than 15 regional or national professional meetings during the first Project year. Two SAs entered national competitions and were selected to participate in special training activities with recognized leaders in their fields; both received some Project financial support for these activities. Also as a result of Project involvement, SAs were offered work as interns in administrative offices at UTK, local community colleges, and public school systems, and at an evaluation consulting firm in the Northeast.

Objective IV: To Build and Extend Supportive Networks Among Women and Minorities in Educational Research

The SAs thought it important to assess the success of the Project in building support within their own group, as well as success in supporting and encouraging network building outside the Project. The Camaraderie/Support Survey (C/SS) consisted of three types of items: (1) eleven items for self-rating of skills on a 1 (lack) to 5 (possess) Likert-type response format, including such skills as conflict

management and problem-solving; (2) open-ended items which assessed each SA's perception of his/her own contribution to the building of camaraderie and support; and (3) open-ended items which assessed various Project activities as related to camaraderie and support-building. Analysis of the self-rating scales indicated that SAs felt most competent in Task Definition (4.5) and least competent in Role Definition (3.6). The activities identified as being particularly useful in developing camaraderie and support within the Project group were (1) a leadership workshop, (2) group dynamics activities, (3) frequent social activities with other Project participants, and (4) on-campus group activities such as the Student Associate-sponsored colloquia.

It was more difficult to assess ways in which the Project aided in the development of camaraderie and support among non-Project personnel. Typically, these data were obtained through anecdotal reports. Project participants seemed to become more sensitive to the need to actively support women and minorities. That support ranged from active involvement in the establishment of the Association for Women in Higher Education in Tennessee to the introduction of women candidates' names for administrative/research openings in higher education.

Objective V: To Enhance Student Associate Employability in Research-Related Positions

The final assessment of the achievement of this objective cannot be made until more SAs receive their degrees. However, certain statements can be made at this time. At a minimum level, the Project provided support for the SAs while they completed their academic course work. In addition, the Project provided mini-courses in research-related topics, access to training opportunities off-campus, and support during specialized internships. SAs have had the opportunity to become acquainted with nationally known researchers at professional meetings. They have worked closely with recognized educational researchers who have in turn recommended them for jobs and other special opportunities. Internship opportunities provided and/or supported by Project funds have allowed the SAs to gain added visibility.

The extent to which these activities will promote the employability of the SAs is difficult to assess. However, one SA currently is employed at a local community college as a federal relations officer, a position for which her employer judged her to be uniquely qualified because of her Project experiences. Other SAs have been offered jobs as a result of their Project experiences which they have had to defer pending graduation. Economic conditions have made jobs in educational research much less accessible than in the past, but the skills and visibility gained by the SAs through Project involvement should increase their competitiveness in the job market.

Results of the summative evaluation indicate that progress was made toward attaining each of the Project objectives. The SAs received training and experience in research-related skills far beyond that typically offered in their respective academic programs. Each SA increased his/her rate of production in disseminating research results and greatly increased his/her range of professional acquaintances. Evaluation of enhanced network support can only be measured by subjective data, while indications are that satisfactory progress has been made in both areas. The SAs and other Project participants were pleased with the apprentice-consultant evaluation model and wished to continue it into the second Project year.

Results of Formative Evaluation

During the course of the first Project year the SAs identified a number of problems or limitations with the original Project structure and procedures. These problems or limitations concerned the procedure for selection of SAs, the within-Project team structure, the evaluation of SA-sponsored colloquia, the procedure for determining the extent of SA involvement in research activities, and the allocation of travel funds.

The Selection of Student Associates

The selection of SAs for the first Project year had been a hurried affair, complicated by a late notification of grant award and a university prohibition on

advertising positions before funding is assured. As a result the first SAs were chosen from a population of students who were known to Faculty Mentors and/or the Project Director. A more equitable system was considered to be imperative.

The SAs attacked this problem by first surveying several admission procedures from academic programs within the University. They developed an application form that included enough information to permit initial screening. Interviews were scheduled with those individuals whose applications suggested potential for the Project. The SAs, along with the Project Director, developed an interview format which allowed the interviewer to rate each applicant on the basis of his/her potential to benefit from and provide benefit to the Project. The applicant potentially could be rated on 25 separate characteristics. The interview procedure, conducted by the SAs, produced 10 finalists, and from that group the second-year Student Associates were chosen by the Faculty Mentors.

Project Team Structure

The original 4-person "team" structure (Faculty Mentor, Faculty Associate, Field Associate, Student Associate) was intended as a means of promoting early research involvement for Student Associates; it was suggested that each team find a research topic of mutual interest, or that existing data collected by the Faculty Mentor be analyzed and disseminated by the group. In theory, this structure had advantages; many of the Project participants were strangers to one another, and finding common interests for research would have been time-consuming. However, the team compositions were not effective for some groups. While two or three persons on the team might become involved in a topic, invariably someone felt left out. The sole advantage to the grouping seemed to be ease of communication; each SA had designated responsibility for keeping the other three members of his/her team informed of Project activities, deadlines, etc.

Within a short while, most Project participants had become involved in research investigations with others on the Project, suggesting that the "team" concept was

unnecessary and initially restrictive. As a result, the second Project year began without "teams." Each participant was free to contact any other participants to begin research involvements. Matching of research interests was facilitated by the use of a computer-generated interest listing, the Skills and Interests Survey (SIS). The SIS was developed in two phases. The first version was an open-ended questionnaire soliciting the respondents' current and projected research involvements. These responses were categorized, and the categorizations provided the basis for a forced-choice questionnaire administered to all Project personnel. The resulting data were computerized for ease of access.

Evaluation of Colloquia

The desire for the scholarly exchange of ideas was the stimulus for initiation of the SA-sponsored colloquia. Speakers, including SAs, other Project personnel, and persons from the University community, shared information concerning their research or other topics of interest to women and minorities in educational research. While some colloquia met with unqualified acclaim, others generated little excitement. In an attempt to evaluate the colloquia and make better plans for future colloquia, in the second year SAs devised an evaluation instrument to be administered at the end of each presentation. The resulting Colloquium Evaluation Form provided ratings of the quality of subject matter, setting, and speaker. The data obtained from these evaluation forms suggested that careful planning would be required to produce colloquia perceived as worthwhile by all Project participants.

Determination of SA Involvement in Research

The procedure for determining the extent of SA involvement in research conducted with other Project personnel had never been formally determined. As a result, both SAs and Faculty Mentors felt that the results frequently were unsatisfactory. SAs sometimes felt either that they were relegated to menial tasks or that they bore an unrealistic burden, while the Faculty Mentor sometimes felt that the SA was failing to put adequate effort into the research. The problem was discussed with Dr. Lloyd

Duvall, the Project's second year external evaluation consultant, who suggested "blank page" planning--a sort of contract among those working on a specific research project. Such a procedure did not exert preconceived notions of "ideal" involvement. Instead, it allowed each participant to state the degree of involvement he/she could reasonably provide, and the exact type of activities in which he/she most needed experience. The resulting contract could also be used at the culmination of the Project to assess each person's contribution in relation to his/her contracted contribution.

Allocation of Travel Funds

Finally, the allocation of travel funds caused disagreements among Project personnel. Traveling to professional meetings is seen by most researchers as essential to professional communication. Such travel has become more and more expensive. Analysis of budget figures at the end of the first Project year indicated that travel funds had been distributed inequitably: A few SAs traveled a great deal, while others did not attend as many conferences as they would have liked to attend. As an added problem, during the second Project year the travel portion of the budget was funded at a considerably lower level. The SAs were forced to consider priorities for their travel. Working with the Project Director, the SAs developed a set of travel request procedures. Persons from each of the four Project personnel tiers were chosen to be members of a Travel Committee to whom all travel requests were submitted. Requests were approved or denied on the basis of the travel request procedures, with appeals directed to the Project Director.

The evaluation of the NIE-ARIE Project produced both formative and summative data which resulted in substantive changes in Project procedures. The consultants provided a valuable learning experience that was an integral part of the SAs' training.

TABLE I. ACTIVITY MATRIX FOR ALL (24) NIE PERSONNEL (1979-80)

	Conferences Workshops and Training Sessions	Papers Prepared for Presentation/ Publication	Grant/Contract Proposals and Reports	Other Research Involvements	Honors Received
Total Activities/ Output	120	76	80	32	25
Activity/Output due to participation in NIE Project	60	32	28	22	8

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